

Trend Study 25C-5-03

Study site name: Giles Hollow.

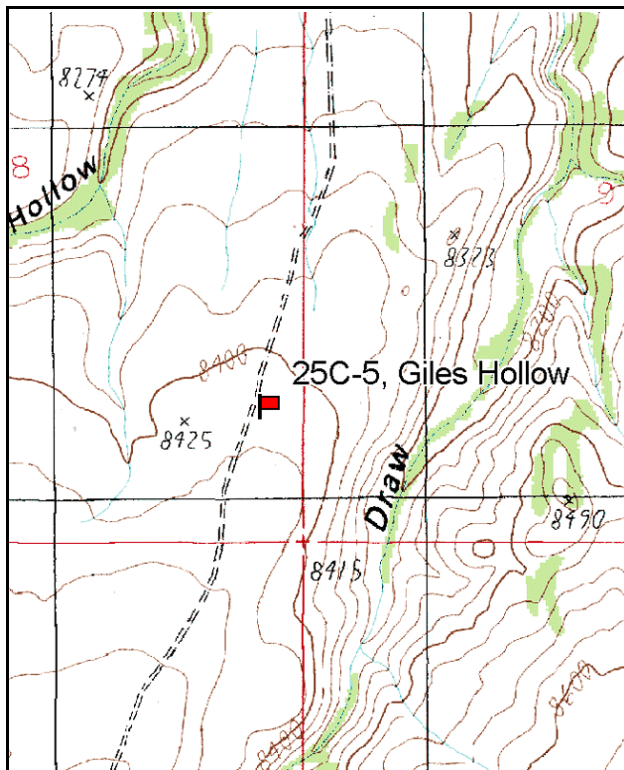
Vegetation type: Mountain brush.

Compass bearing: frequency baseline 180 degrees magnetic.

Frequency belt placement: line 1 (11 & 95ft), line 2 (34ft), line 3 (59ft), line 4 (71ft).

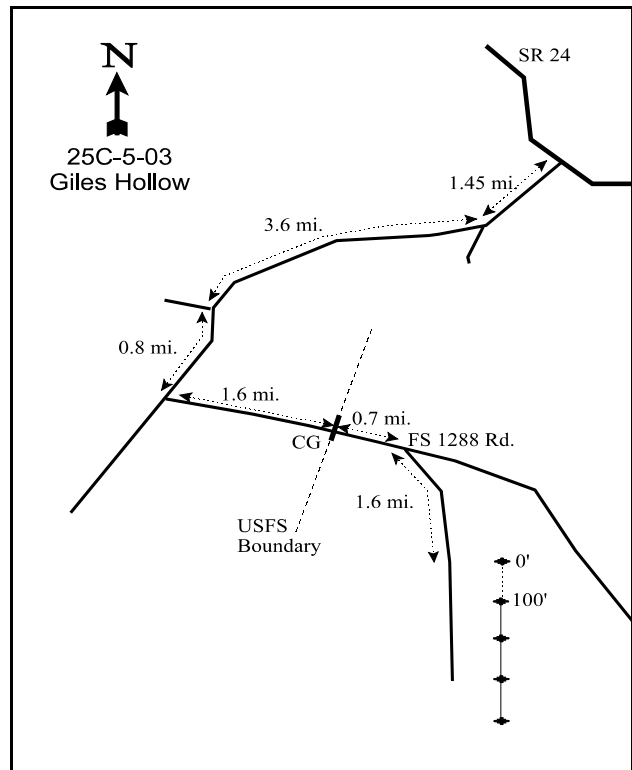
LOCATION DESCRIPTION

From the Egan Fish Hatchery south of Bicknell, travel southwest 1.45 miles on a paved road to a gravel road forking to the right (the left fork goes to King Ranch). Follow the right fork for 3.6 miles to where the road forks again. Turn left and go 0.8 miles where you take another left fork onto the Aquarius Ranger Station Road (F.S. Rd. 1288) and go 1.6 miles to a cattleguard at the USFS boundary. Continue for 0.7 miles, then turn right and go 1.6 miles south to a green fencepost 100 feet off the road to the left. The fencepost has a browse tag #7180 attached, and is the 0-foot baseline stake. The 100-foot end is also marked by a fencepost. The other three stakes are marked by rebar.



Map Name: Government Point

Township 30S, Range 3E, Section 8



Diagrammatic Sketch

GPS: NAD 27, UTM 12S 4229207 N, 447555 E

DISCUSSION

Giles Hollow - Trend Study No. 25C-5

The Giles Hollow study is located on Forest Service land on the northwest slope of the Aquarius Plateau. The area is an open windswept expanse of low-growing vegetation. It has a 5% slope to the north and an elevation of approximately 8,400 feet. The range type is low rabbitbrush-grass. Heavy cattle and sheep grazing have had a major impact on the vegetation here. A deferred rotation system of grazing is used on the allotment, with cattle grazing scheduled for a period between mid-June and mid-October on 4 pastures. Pronghorn antelope use the range year-round. A pellet group transect read along the study baseline in 1998 estimated 14 deer/antelope, 4 elk, and 10 cow days use/acre (35 ddu/ha, 10 edu/ha and 25 cdu/ha). Cattle were on the site during the 1998 reading (7/22/98). Pellet group data from 2003 estimated much lighter use at only 1 deer/antelope, 1 elk and 4 cow days use/acre (3 ddu/ha, 3 edu/ha and 10 cdu/ha). A few sheep pellet groups were also encountered.

The soil is shallow, compact, and rocky below the surface. Effective rooting depth is estimated at just over 8 inches. Soil texture is a loam which is neutral in reaction (pH 6.7). Rock and pavement account for more than 1/3 of the ground surface. The soil infiltration capacity appears to be good, and with adequate vegetation and litter cover, erosion is not a problem on this site.

The browse composition is dominated by the increasers, narrowleaf low rabbitbrush and broom snakeweed. Narrowleaf low rabbitbrush accounted for 84% of the browse cover in 1994 and 76% in 2003. Density of the more desirable species, black sagebrush, fourwing saltbush, and winterfat, are low due in part to a long history of heavy livestock use. These shrubs have displayed moderate to heavy hedging and are preferred by both livestock and big game. Winterfat is a very low growing form, averaging only 4 to 5 inches in height due to continued hedging. Rabbitbrush and broom snakeweed show little indication of any utilization with good numbers of seedlings and young. Rabbitbrush nearly doubled in density between 1985 and 1991 from 6,333 to 11,132 plants/acre. The population appears to have stabilized at around 10,000 plants/acre. Broom snakeweed declined 67% in density between 1985 and 1991. It's density has remained relatively stable since 1991, averaging 3,900 plants/acre. There may have been some problems in identification between these two similar looking plants during the 1985 reading.

The total cover for grasses is high compared to the cover contributed by forbs and browse, due largely to an abundance of blue grama. Blue grama provided 82% of the total grass cover in 1994 and 98% in 2003. This warm season grass, an increaser with livestock grazing, produces high quality forage, but in small amounts. These plants are very short (about 1 inch tall) and often escape grazing. The most desirable grass, Indian ricegrass, is present in very low numbers. Bottlebrush squirreltail is also common but has significantly decreased in frequency since the 1985 reading. Frequency and diversity of forbs is very low with only two species encountered in 1985, 1991 and 1994. Six additional forbs were encountered in 1998 but in very low numbers. Total forb cover averaged less the ½ of 1% in 1994 and 1998. Low fleabane and globemallow may provide limited forage to antelope in spring and summer. The rather abundant lichens may also provide some forage, especially after rain (Smith and Beale 1980).

1985 APPARENT TREND ASSESSMENT

The soil trend appears to be stable with little exposed bare ground subject to erosion. The vegetative community is poor. The desirable browse species, black sagebrush and winterfat, may be replaced by low-value increasers. Composition of the herbaceous component is also poor. Reduced livestock grazing and time are required for this plant community to heal naturally.

1991 TREND ASSESSMENT

The soil trend is stable. Percent rock and pavement cover have increased, probably because of some minor erosion and loss of litter cover. Vegetation basal cover has increased from 13% to 15%, with cryptogamic cover also slightly increasing. Litter cover loss, as it has been reported on most other sites throughout the state, appears to be more of a function of drought. The fringed sagebrush population is about the same as it was in 1985. Black sagebrush and winterfat numbers have both decreased by 36% and 6% respectively. Black sagebrush's decadency rate has gone from zero to 57% in 1991. The increaser, stickyleaf low rabbitbrush, has increased 43% in density. Even with the dramatic decrease in broom snakeweed population (67%), the browse trend would still be considered down slightly. The overall trend for the herbaceous understory is also slightly down. Nested frequency of bottlebrush squirreltail has declined significantly.

TREND ASSESSMENT

soil - stable (3)

browse - down slightly (2)

herbaceous understory - down slightly (2)

1994 TREND ASSESSMENT

Ground cover characteristics are slightly down since 1991. Bare ground has increased slightly, while litter and cryptogam cover have declined somewhat. Erosion is not a problem, but the soil trend is still down slightly due to the dry conditions. The site is still dominated by undesirable increaser shrubs. However, the trend for black sagebrush is up due to declining rates of decadence and better vigor. Winter fat density has slightly increased. Overall browse trend is stable for the key species. Over 80% of the herbaceous understory cover is made up of one species, blue grama, which will act as an increaser with moderate to heavy grazing. Forbs are almost nonexistent. Trend is stable for the herbaceous understory and should be considered in poor condition because of the poor composition with increaser species.

TREND ASSESSMENT

soil - slightly down (2)

browse - stable (3)

herbaceous understory - stable (3)

1998 TREND ASSESSMENT

Trend for soil is up slightly. Percent bare ground declined from 17% to 13% and litter cover increased from 18% to 26%. Vegetation and cryptogamic cover also increased. On the negative side, rock and pavement cover increased from 28% to 41%, perhaps due to some soil loss. Trend for browse appears stable with similar population densities for key species, black sagebrush and winterfat, since 1994. Utilization of black sagebrush is currently light with normal vigor and no decadent plants sampled. Recruitment has improved slightly since 1994 with seedlings accounting for 30% of the population and young plants making up 4% of the population. Winterfat is still low growing, averaging only 4 inches in height. Utilization has remained moderate to heavy since 1994, but the population has remained stable at about 1,500 plants/acre. Both increasers, narrowleaf low rabbitbrush and broom snakeweed, have declined slightly in density. However, reproduction of rabbitbrush remains high with abundant seedlings and young. Trend for the herbaceous understory is up slightly. Blue grama still dominates the understory by providing 85% of the total herbaceous cover. Both blue grama and bottlebrush squirreltail have increased slightly in nested frequency. Forbs are still severely depleted although more species were picked up in 1998 and sum of nested frequency of forbs nearly doubled from 46 to 80.

TREND ASSESSMENT

soil - up slightly (4)

browse - stable (3)

herbaceous understory - up slightly (4)

2003 TREND ASSESSMENT

Trend for soil is stable. Relative percent cover of vegetation has increased slightly while litter cover has declined from 20% to 10%. Cover of cryptogams increased 41% and cover of bare ground declined slightly. There is adequate protective ground cover to prevent most erosion. Trend for browse is stable but poor with narrowleaf low rabbitbrush providing 76% of the browse cover. Preferred browse, black sagebrush and winterfat, have both increased slightly in density. Use remains light on black sagebrush and heavy on winterfat. Vigor is good for both species. Narrowleaf low rabbitbrush has increased slightly in density to 11,340 plants/acre. Broom snakeweed, another increaser, has remained stable in density at 3,780 plants/acre. Trend for the herbaceous understory is down slightly. Sum of nested frequency of perennial grasses has declined due to a significant and dramatic drop in the nested frequency of bottlebrush squirreltail. The dominant grass, blue grama, has remained stable. Because blue grama is so much more abundant than all the other herbaceous species, the decline in bottlebrush squirreltail is mitigated somewhat. Sum of nested frequency of perennial forbs has decreased slightly and forbs are still rare.

TREND ASSESSMENT

soil - stable (3)

browse - stable (3)

herbaceous understory - down slightly (2)

HERBACEOUS TRENDS --

Management unit 25C, Study no: 5

Type	Species	Nested Frequency					Average Cover %		
		'85	'91	'94	'98	'03	'94	'98	'03
G	Bouteloua gracilis	317	337	307	329	329	21.54	25.74	28.25
G	Oryzopsis hymenoides	_b 13	_{ab} 4	_a 1	_{ab} 6	_a -	.00	.06	.00
G	Sitanion hystrix	_c 315	_b 207	_b 221	_b 226	_a 35	4.83	4.11	.62
Total for Annual Grasses		0	0	0	0	0	0	0	0
Total for Perennial Grasses		645	548	529	561	364	26.38	29.92	28.88
Total for Grasses		645	548	529	561	364	26.38	29.92	28.88
F	Arabis spp.	-	-	-	2	1	-	.00	.00
F	Astragalus spp.	-	-	-	1	-	-	.00	-
F	Chenopodium fremontii (a)	-	-	-	-	6	-	-	.04
F	Chenopodium leptophyllum(a)	-	-	_a -	_a -	_b 57	-	-	.70
F	Draba spp. (a)	-	-	-	4	-	-	.00	-
F	Erigeron pumilus	7	3	7	7	2	.02	.02	.03
F	Lappula occidentalis (a)	-	-	-	3	-	-	.00	-
F	Penstemon spp.	-	-	-	1	-	-	.00	-

T y p e	Species	Nested Frequency					Average Cover %		
		'85	'91	'94	'98	'03	'94	'98	'03
F	Polygonum douglasii (a)	-	-	-	1	-	-	.00	-
F	Sphaeralcea coccinea	38	45	39	61	52	.09	.36	.30
F	Unknown forb-perennial	1	-	-	-	3	-	-	.01
Total for Annual Forbs		0	0	0	8	63	0	0.01	0.75
Total for Perennial Forbs		46	48	46	72	58	0.10	0.39	0.34
Total for Forbs		46	48	46	80	121	0.10	0.40	1.09

Values with different subscript letters are significantly different at alpha = 0.10

BROWSE TRENDS --

Management unit 25C, Study no: 5

T y p e	Species	Strip Frequency			Average Cover %		
		'94	'98	'03	'94	'98	'03
B	Artemisia frigida	5	0	1	.00	-	.03
B	Artemisia nova	10	11	15	.36	1.21	1.21
B	Atriplex canescens	3	1	2	.00	-	-
B	Ceratoides lanata	37	34	38	.19	.47	.83
B	Chrysothamnus viscidiflorus stenophyllus	88	85	91	4.82	7.94	9.74
B	Gutierrezia sarothrae	73	69	77	.32	1.57	.95
B	Opuntia spp.	0	3	4	-	-	.00
B	Pediocactus simpsonii	0	3	3	-	.02	.00
B	Tetradymia canescens	0	1	0	-	-	-
B	Yucca harrimaniae	1	0	3	.00	-	.03
Total for Browse		217	207	234	5.71	11.22	12.81

CANOPY COVER, LINE INTERCEPT --

Management unit 25C, Study no: 5

Species	Percent Cover
	'03
Artemisia nova	.65
Ceratoides lanata	.66
Chrysothamnus viscidiflorus stenophyllus	8.94
Gutierrezia sarothrae	.58

KEY BROWSE ANNUAL LEADER GROWTH --
Management unit 25C, Study no: 5

Species	Average leader growth (in)
	'03
Ceratoides lanata	1.9

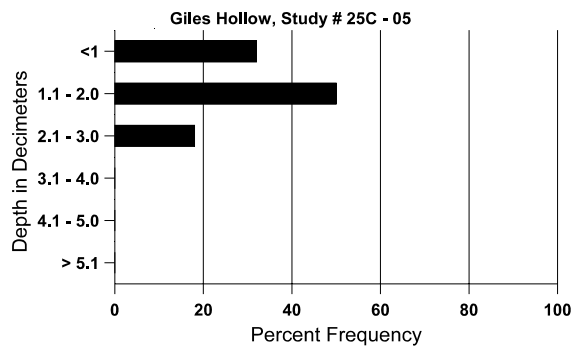
BASIC COVER --
Management unit 25C, Study no: 5

Cover Type	Average Cover %				
	'85	'91	'94	'98	'03
Vegetation	12.75	15.25	31.80	46.57	43.48
Rock	6.00	10.75	19.31	10.92	20.56
Pavement	23.25	28.00	8.79	30.21	17.64
Litter	34.00	26.00	18.34	26.23	10.65
Cryptogams	3.75	5.00	2.25	4.61	6.47
Bare Ground	20.25	15.00	16.75	13.10	9.64

SOIL ANALYSIS DATA --
Management unit 25C, Study no: 5, Study Name: Giles Hollow

Effective rooting depth (in)	Temp °F (depth)	pH	%sand	%silt	%clay	%OM	PPM P	PPM K	ds/m
8.3	66.0 (8.0)	6.7	44.0	33.4	12.6	2.6	19.3	89.6	0.5

Stoniness Index



PELLET GROUP DATA --

Management unit 25C, Study no: 5

Type	Quadrat Frequency		
	'94	'98	'03
Sheep	-	-	4
Rabbit	58	16	4
Elk	-	4	1
Deer	15	11	7
Cattle	-	-	3
Antelope	3	-	1

Days use per acre (ha)	
'98	'03
-	2 (5)
-	-
4 (10)	1 (2)
9 (22)	1 (3)
10 (25)	4 (11)
-	-

BROWSE CHARACTERISTICS --

Management unit 25C, Study no: 5

		Age class distribution (plants per acre)					Utilization				
Year	Plants per Acre (excluding seedlings)	Seedling	Young	Mature	Decadent	Dead	% moderate	% heavy	% decadent	% poor vigor	Average Height Crown (in)
<i>Artemisia frigida</i>											
85	3800	-	1400	2400	-	-	0	0	0	0	2/4
91	3999	200	1800	1466	733	-	20	5	18	2	3/4
94	180	-	20	140	20	-	0	11	11	0	2/4
98	0	-	-	-	-	-	0	0	0	0	-/-
03	20	-	20	-	-	-	0	0	0	0	-/-
<i>Artemisia nova</i>											
85	732	-	466	266	-	-	18	0	0	0	5/11
91	466	-	200	-	266	-	29	29	57	29	-/-
94	400	-	-	380	20	20	5	5	5	0	5/9
98	460	200	20	440	-	-	0	0	0	0	6/12
03	740	-	240	500	-	40	8	0	0	0	6/16
<i>Atriplex canescens</i>											
85	66	-	-	-	66	-	100	0	100	0	-/-
91	199	-	133	-	66	-	67	0	33	0	-/-
94	60	-	-	60	-	-	33	0	0	0	9/13
98	20	-	-	20	-	-	0	0	0	0	11/11
03	40	-	-	40	-	-	0	100	0	0	11/17
<i>Ceratoides lanata</i>											
85	1199	-	133	1066	-	-	44	22	-	0	4/5
91	1133	-	333	800	-	-	35	12	-	0	4/5
94	1520	-	100	1420	-	-	30	21	-	0	2/4
98	1540	20	100	1440	-	-	42	25	-	0	4/7
03	1640	-	-	1640	-	-	28	56	-	0	5/7

		Age class distribution (plants per acre)					Utilization				
Y e a r	Plants per Acre (excluding seedlings)	Seedling	Young	Mature	Decadent	Dead	% moderate	% heavy	% decadent	% poor vigor	Average Height Crown (in)
Chrysothamnus viscidiflorus stenophyllus											
85	6333	1066	2800	2933	600	-	2	0	9	1	8/10
91	11132	66	6466	3733	933	-	14	2	8	0	6/9
94	10640	60	1240	8980	420	20	.18	0	4	2	5/11
98	9220	2400	1140	8000	80	40	0	0	1	.21	7/12
03	11340	-	800	10040	500	180	0	0	4	2	7/14
Gutierrezia sarothrae											
85	10266	1133	2200	8066	-	-	0	0	0	0	7/7
91	3400	133	1200	2200	-	-	0	0	0	0	4/4
94	4920	100	1940	2740	240	360	.40	0	5	1	3/4
98	3500	840	280	3220	-	-	0	0	0	0	7/8
03	3780	160	280	3500	-	40	0	0	0	0	4/5
Opuntia spp.											
85	398	-	66	266	66	-	0	0	17	0	4/8
91	333	66	333	-	-	-	0	0	0	0	-/-
94	0	-	-	-	-	-	0	0	0	0	-/-
98	60	-	40	20	-	20	0	0	0	0	2/9
03	80	-	20	60	-	-	0	0	0	0	4/14
Pediocactus simpsonii											
85	0	-	-	-	-	-	0	0	-	0	-/-
91	0	-	-	-	-	-	0	0	-	0	-/-
94	0	-	-	-	-	-	0	0	-	0	-/-
98	60	-	-	60	-	-	0	0	-	0	1/2
03	100	-	-	100	-	-	0	0	-	0	1/3
Tetradymia canescens											
85	0	-	-	-	-	-	0	0	-	0	-/-
91	0	-	-	-	-	-	0	0	-	0	-/-
94	0	-	-	-	-	-	0	0	-	0	-/-
98	40	-	-	40	-	-	0	100	-	0	-/-
03	0	-	-	-	-	-	0	0	-	0	-/-
Yucca harrimaniae											
85	0	-	-	-	-	-	0	0	-	0	-/-
91	0	-	-	-	-	-	0	0	-	0	-/-
94	40	-	40	-	-	-	0	0	-	0	3/5
98	0	-	-	-	-	-	0	0	-	0	-/-
03	100	-	100	-	-	-	0	0	-	0	-/-